

REMARKS-General

1. The amended independent claim 22 incorporates all structural limitations of the original claim 1 and includes further limitations previously brought forth in the disclosure. No new matter has been included. All new claims 22-44 are submitted to be of sufficient clarity and detail to enable a person of average skill in the art to make and use the instant invention, so as to be pursuant to 35 USC 112.

Response to Rejection of Claims 22-44 under 35USC103

2. The Examiner rejected claims 22-44 over Brown (US. Pub No. 20050063441) in view of Scott et al (US 6,567,435) and Segre et al (US 3,963,347). Pursuant to 35 U.S.C. 103:

“(a) A patent may not be obtained though the invention is **not identically** disclosed or described as set forth in **section 102 of this title**, if the **differences** between the subject matter sought to be patented and the prior art are such that the **subject matter as a whole would have been obvious** at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.”

3. In view of 35 U.S.C. 103(a), it is apparent that to be qualified as a prior art under 35USC103(a), the prior art must be cited under 35USC102(a)~(g) but the disclosure of the prior art and the invention are not identical and there are one or more differences between the subject matter sought to be patented and the prior art. In addition, such differences between the subject matter sought to be patented **as a whole** and the prior art are obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

4. In other words, the differences between the subject matter sought to be patent as a whole of the instant invention and Brown which is qualified as prior art of the instant invention under 35USC102(b) are obvious in view of Scott and Segre at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

5. However, the instant invention contains the following distinctive features as claimed in claim 22:

(I) Brown merely discloses a miniaturized laser package for producing diode-pumped micro lasers without any mention of any power monitoring system. The instant invention provides **a built-in power monitoring system**, including a photodiode and an IR blocking filter, to control a power output of the optical resonant cavity.

(II) Brown teaches a method for producing high-density low-cost micro and miniature laser resonators capable of providing high beam quality laser radiation that can be assembled in highly compact packages using fabrication methodologies. Since there is no power monitoring system incorporating with the package of Brown, the size of the miniaturized laser package of Brown can be reduced. However, the built-in power monitoring system of the instant invention is an internal component of the green diode laser that the photodiode and the IR blocking filter are disposed within the laser casing. In other words, having the built-in power monitoring system, the size and weight of the green diode laser of the instant invention is still smaller than the conventional one.

(III) A lasing medium and an intracavity frequency doubler are supported by the laser casing to simplify the structural configuration of the green diode laser. As shown in Fig. 4 of Brown, the pedestal 28 is mounted at one end of the sealed cover 29 wherein all other components, including the diode 22 and the micro laser assembly 20, are supported by the pedestal 28 via the shelf 25 extending therefrom. However, according to the instant invention, only the semiconductor chip of the supported by the heat sink to dispense the heat thereto while other components including the lasing medium and the intracavity frequency doubler are supported by the laser casing. Therefore, **no shelf is required** in the instant invention to extend from the heat sink to support the laser medium so as to not only minimize the stress created by the overall weight of the laser medium and the intracavity frequency doubler but also reduce the overall weight of the green diode laser.

(IV) The photodiode is supported by the heat sink at a position that when the frequency-double beam exits the output facet. Brown merely discloses, in paragraph 0050, the package may also contains a photodiode for the purpose of providing feedback to an external electrical laser controller and/or controlling the temperature of

the gain module. The only mention in Brown is that the package may contain a **photodiode** without any further disclosure in the specification and the drawings. In other words, Brown does not disclose what kinds of feedback signal can be used for controlling a power output of the optical resonant cavity and how the feedback signal generated from the diode laser.

(V) The IR blocking filter is **inclinedly** and sealedly mounted at the second opening end of the laser casing to optically communicate with the output facet of the intracavity frequency doubler. Brown never mentions any IR blocking filter in the package to generate the feedback signal. Even though Brown merely mentions a photodiode can be incorporated in the package, Brown never considers the IR blocking filter supported in an inclined manner to incorporate with the photodiode for generating the feedback signal. In other words, even adding a photodiode into the Brown's package, no feedback signal can be formed without the inclined IR blocking filter.

(VI) The IR blocking filter reflects a portion of the frequency-double beam towards the photodiode such that the photodiode is adapted for detecting the frequency-double beam from the IR blocking filter as a feedback for controlling a power output of the optical resonant cavity. Accordingly, there are two major functions of the IR blocking filter of the instant invention: (i) block IR radiation, and (ii) reflect a portion of the frequency-double beam towards the photodiode. Brown merely discloses, in paragraph 0050, that "many such feed-back techniques are known in the art of constructing stabilized diode pumped lasers, any of which may be incorporated in the packages, subject to their compatibility with mass production methods". The applicant respectfully submits that the instant invention is not one of the feed-back techniques known in the art as taught by Brown because no other cited art teaches about using the IR blocking filter and the photodiode to generate the feedback from the frequency-double beam.

6. Scott, on the other hand, merely discloses a vertical cavity surface emitting laser (VCSEL) power monitoring system which comprises a window inclined 42 to reflect a portion of the emitted light along a second path to the photodiode 37. However, the structural configuration of the VCSEL power monitoring system is different from the green DPSS diode laser of the instant invention. Scott teaches, as shown in Fig. 4, the VCSEL die 36 is mounted on the photodiode 37 such that the emitted light from the VCSEL die 36 is directly reflected at the window 42 back to the photodiode 37. The

applicant respectfully submits that the photodiode supported by the heat sink at a position that when the frequency-double beam exits the output facet, the IR blocking filter reflects a portion of the frequency-double beam towards the photodiode. It is clearly that by adding the photodiode 37 and the window 42 disclosed by Scott into the package of Brown, no feedback can be generated as claimed in the instant invention. It is because when the pumping radiation is emitted from the semiconductor chip, the pumping radiation must pass through the lasing medium and the intracavity frequency doubler to form the frequency-double beam before reflecting by the IR blocking filter to the photodiode. In other words, if the photodiode is supported on the diode 22 of Brown with the inclined window of Scott, as proposed by the Examiner, a portion of the converted beam 160 of Brown may merely reflect back to the micro laser assembly 20 but not to the photodiode. Therefore, even incorporating with the window 42 and the photodiode 37 of Scott, the package of Brown cannot achieve the built-in power monitoring system to control a power output of the optical resonant cavity.

7. Segre merely discloses a laser rangefinder comprising a laser generator generating laser light for enabling fog determinations, related visibility measurements and cloud height determinations. However, the objective and the subject matter of Segre are totally different from the instant invention. Segre discloses, in column 8, lines 7-10, spectral filtering was provided by an outside window 46 if infrared transmitting glass having no transmission below 1.2 microns and the 1.6 micron long wavelength cutoff of the detector 50. In addition, Fig. 4 of Segre clearly shows a portion of the light striking the target is reflected back to the ceilometer 42 through the window 46. Therefore, it is totally different from the instant invention that the inclined IR blocking filter reflects a portion of the frequency-double beam towards the photodiode. In other words, even the package of Brown incorporates with the window 46 of the Segre, as proposed by the Examiner, a portion of the converted beam 160 of Brown is NOT striking the target (actually there is no target in Brown's package) and cannot reflected back to the package through the inclined window 46 for controlling a power output of the optical resonant cavity.

8. Also, it is not fair and not responsible to reject the instant invention by altering the terms and description of the cited arts with the terminologies in the instant invention to make the cited arts more related to the subject matters as claimed in the instant invention, especially by simply adding an inclined window into the package of Brown.

The applicant respectfully submits the IR blocking filter is mounted inclinedly to reflect a portion of frequency-double beam towards the photodiode supported by the heat sink to detect the frequency-double beam from the IR blocking filter as a feedback for controlling a power output of the optical resonant cavity.

9. The Examiner appears to reason that since Brown teaches that a miniaturized laser package for generating a converted beam, it would have been obvious to one skilled in the art to modify the package of Brown with a photodiode and an inclined window as taught by Scott and Segre. But this is clearly **not** a proper basis for combining references in making out an obviousness rejection of the present claims. Rather, the invention must be considered as a whole and there must be something in the reference that suggests the combination or the modification. See *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984) ("The claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination"), *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984), ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989), ("Although the Commissioner suggests that [the structure in the primary prior art reference] could readily be modified to form the [claimed] structure, "[t]he mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.")

10. In the present case, there is no such suggestion. Brown, Scott and Segre perform very different types of laser arrangement. In any case, even combining Brown, Scott and Segre would not provide the invention as claimed -- a clear indicia of nonobviousness. *Ex parte Schwartz*, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992), ("Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that terminates short of the end of the one edge of the product containing area, as now claimed."). That is, modifying Brown with Scott and Segre, as proposed by the Examiner, would not provide a green diode laser using an IR blocking filter mounted inclinedly to reflect a portion of frequency-double beam towards the photodiode such that the photodiode is adapted for detecting the

frequency-double beam from the IR blocking filter as a feedback for controlling a power output of the optical resonant cavity.

11. Applicant believes that neither Brown, Scott nor Segre, separately or in combination, suggest or make any mention whatsoever of using a photodiode and an inclined IR blocking filter as recited in claims 22-44.

12. Applicant believes that for all of the foregoing reasons, all of the claims are in condition for allowance and such action is respectfully requested.

The Cited but Non-Applied References

13. The cited but not relied upon references have been studied and are greatly appreciated, but are deemed to be less relevant than the relied upon references.

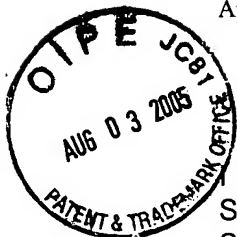
14. In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration and withdrawal of the objection are requested. Allowance of claims 22-44 at an early date is solicited.

15. Should the Examiner believe that anything further is needed in order to place the application in condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Raymond Y. Chan
Reg. Nr.: 37,484
108 N. Ynez Ave.
Suite 128
Monterey Park, CA 91754
Tel.: 1-626-571-9812
Fax.: 1-626-571-9813

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Person Signing: Raymond Y. Chan